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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the graph which set the vertical axis as the horizontal axis and the contact load (kgf) of a cap's each part for the travel (mm), and plotted the numerical-analysis result by the finite element method.

[Drawing 2] some plastics caps of one example of this invention -- it is a cross-section side elevation

[Drawing 3] It is the expanded sectional view of the important section of the plastics cap of drawing 2.

[Drawing 4] the state where the plastics cap of drawing 2 was closed into the bottle is shown -- it is a cross-section side elevation in part

[Drawing 5] It is explanatory drawing showing the size of the cap of drawing 2 who used for the example of an examination.

[Drawing 6] the changed completely type of the cap of the example of drawing 2 is shown -- it is a cross-section side elevation in part

[Drawing 7] other deformation of the cap of the example of drawing 2 is shown -- it is a cross-section side elevation in part

[Drawing 8] some caps of other examples of this invention -- it is a cross-section side elevation

[Drawing 9] the plastics cap of the example of further others of this invention is shown -- it is a cross-section side elevation in part

[Drawing 10] the state where the cap of drawing 9 was closed into the bottle is shown -- it is a cross-section side elevation in part

[Description of Notations]

- 1 Plastics Cap
- 2 Top Panel Section
- 3 Skirt-Board Section
- 4 Inside 4
- 5 Inner Ring
- 6 Seal Auxiliary Mechanism 6
- 7 Screw
- 8 Knurling Tool Slot
- 9 Soffit
- 10 Bridge
- 11 Periphery-like Band
- 12 Piece-like Ratchet
- 13 Annular Cutting Plane
- 14 Connection Section
- 15 The 1st Shaft-Orientations Slit or Weakening Line
- 16 Hoop-Direction Slit or Weakening Line
- 17 The 2nd Shaft-Orientations Slit or Weakening Line
- 18 Connection Section

19 Degassing Slot
20 Root Section
21 Standup Section
22 Taper-like Peripheral Face
23 Guide Side
24 Tip
25 Inner Skin
26 The Maximum Outer-Diameter Section
30 31 Receptacle seat
32 33 Slot
34 Height for Seals
35 Outer Ring
40 Bottle Mouth
41 Inner Skin
42 Crowning
43 Peripheral Face
44 Screw for Cap Conclusion
45 Jaw for Periphery-like Band Fixation
46 Support Ring
50 Periphery-like Hook
51 Root
52 Notching Slot
53 Periphery-like Fin
54 Slot
55 Bead
56 Notching Slot
57 Ratchet
58 Stopper
59 Slot
60 Perpendicular Engagement Section
61 Inclination Engagement Section

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CLAIMS

[Claim(s)]

[Claim 1] It has the top panel section, the skirt-board section which equipped the inside with the screw thread which engages with a bottle neck, and the inner ring which engages with the bottle mouth formed inside the top panel section. to the soffit of the aforementioned skirt-board section In the dress type plastics cap with whom the periphery-like band stopped by the bottle neck on the occasion of unstopping unstopping is connected through the bridge which can be fractured The aforementioned inner ring has a shaft-orientations size perpendicular to sufficient top panel to make possible a field seal with a bottle mouth inside. The peripheral face of the aforementioned inner ring is 10 degrees of cone angles and the 60-degree taper side prolonged in the direction of the outside of a path, and shaft orientations from the standup section of the root or the root. While the point of the aforementioned inner ring has a tip smaller than the bore of a bottle mouth It has a guide side with the bottle mouth with which an outer diameter decreases gradually towards a tip. and the root of an inner ring Under the condition of not being larger than a bottle mouth bore, it has a bottle mouth bore and an almost equal outer diameter, and, for the aforementioned cap, an elastic modulus is 1.0×10^4 . Or 2.0×10^4 kg/cm² Plastics cap characterized by consisting of the resin of the range.

[Claim 2] The aforementioned inner ring is a plastics cap according to claim 1 who attaches, and is prepared so that the thickness in the horizontal section may be equal on parenchyma or this thickness may decrease gradually originally towards a nose of cam.

[Claim 3] the shaft orientations by which the aforementioned inner ring is equivalent to a cap tightness angle -- the plastics cap according to claim 1 who has the one 1.3 times shaft-orientations size [0.3 or] of this of a variation rate

[Claim 4] The plastics cap according to claim 1 on whom the aforementioned inner ring has the thickness of 0.5 or 2.0 in portions other than a guide side.

[Claim 5] The plastics cap according to claim 1 whom a plastics cap turns into from an olefin system resin.

[Claim 6] The plastics cap according to claim 1 by whom the small salient for seal which engages with a way with the crowning of a bottle mouth or the periphery section outside an inner ring is formed in the inside of the top panel section.

[Claim 7] The plastics cap according to claim 1 by whom the knurling tool slot for cap grasping is formed in the aforementioned skirt-board outside side.

[Claim 8] The aforementioned periphery-like band and a skirt-board subordinate edge are a plastics cap according to claim 1 who is separated by the periphery-like cutting plane, and the aforementioned bridge was located inside the periphery-like cutting plane, and has connected the skirt-board subordinate edge and the periphery-like band.

[Claim 9] The plastics cap according to claim 8 with whom the stopper with which it was located inside the periphery-like cutting plane, and only the small interval is prolonged in the periphery-like bandeau rather than the periphery-like cutting plane is formed in the soffit of the aforementioned skirt-board section, and the aforementioned stopper and the aforementioned bridge engage on the occasion of

closing and to whom a cap's revolution is given.

[Claim 10] The aforementioned periphery-like band is a plastics cap according to claim 1 who has arranged many flexible fins prolonged in path inboard in the shape of a periphery, and has them.

[Claim 11] The plastics cap according to claim 1 who comes to prepare at least one height for seals which projected only the minute interval rather than bottle **** which is located through a slot from the receptacle seat which engages with a way exactly on the crowning of the bottle regio oralis and the periphery section, and parenchyma outside the inner ring of the aforementioned top panel section, and this receptacle seat, and passes along this receptacle seat.

[Claim 12] The plastics cap according to claim 11 on whom the height for seals has an almost trapezoid cross-section configuration, and a slot has the cross-section configuration of a handstand trapezoidal shape.

[Claim 13] The plastics cap according to claim 12 whose cone angle of a trapezoidal-shape height is 60 degrees or 120 degrees.

[Claim 14] The plastics cap according to claim 11 on whom the upper surface of the height for seals has the field which should carry out the seal of the container regio oralis, and a front face in complementary relationship.

[Claim 15] The plastics cap according to claim 11 who the height for seals received and projected to the method of the inside of 3 or 1000 micrometers rather than the field of a seat.

[Claim 16] The plastics cap according to claim 11 whose width size at the nose of cam of the height for seals is 5 or 500 micrometers.

[Claim 17] The plastics cap of the 11th publication of a claim currently formed by the inner skin of the outer ring with which the receptacle seat which engages with the periphery section of the bottle mouth section projected to shaft orientations, and was prepared in the top panel section.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] About a dress type plastics cap, more, in advance of seal breaking, bridge breaking is ensured to a detail, and this invention relates to the dress type plastics cap to whom the guarantee of contents having been sealed by this is offered.

[0002]

[Description of the Prior Art] The hanging skirt board is fabricated by plastics to one, and it consists of the periphery of a top panel and a top panel, and without using a liner and packing, from the ability of seal between container mouths to be performed, the plastics cap who prepared the conclusion mechanism to a container in the inner skin of this skirt board is not extended variously, and is widely used as a cap to a product.

[0003] Various proposals are already made also about a dress type plastics cap's seal structure. to JP,6-33098,B In the plastics cap who fabricated the hanging skirt board by plastics to one, consisted of the periphery of a top panel and a top panel, and prepared the conclusion mechanism to a container in the inner skin of this skirt board The receptacle seat exactly engaged the inside corner section or near [its] this top panel and the skirt board on the upper limb of a container mouth or a periphery edge, and parenchyma, At least one height for seals which was located through the slot from this receptacle seat, and projected only the minute interval rather than the field of this receptacle seat is prepared, and the plastics cap characterized by performing seal by the pressure accompanying the compression set of this height for seals is indicated.

[0004] Using an inner ring for seal of the container regio oralis is also already known. moreover, to JP,5-47464,B Although it was not dress structure, were formed inside the top plate of the main part of a lid, and the main part of a lid. It is the container lid which consists of a liner equipped with the annular height which went caudad and was extended in the truncated-cone configuration on the whole toward the direction of opening for carrying out the seal of the inside of the container regio oralis. As for the aforementioned annular height, a base is prolonged in the method of the outside of radial in a slanting lower part at a cross-section straight-line target. Have the medial surface linearly prolonged in a slanting lower part, and a medial surface forms a big angle to shaft orientations rather than the lateral surface of a base. the lateral surface to which a point extends in a slanting lower part toward the radial inside -- and - - as a whole -- the method of the outside of radial -- a cross section -- The container lid characterized by being prolonged in the method of the outside of radial at the slanting lower part is indicated.

[0005] Furthermore, it sets on a pill fur proof type (tamper shrimp dent type) plastics cap. After a bridge goes out, there is also already a proposal of which seal is canceled. to JP,6-69152,U The main part of a lid which has the container thread part which consisted of peripheral walls which hang from a lid top plate and the periphery of this lid top plate, and was formed in the inner skin of this peripheral wall at the peripheral face of container ****, and the cap thread part to screw, The pill fur proof band with which it was equipped in one with the aforementioned main part of a lid to container **** and which was equipped with two or more bridges, Although the aforementioned packing for seal slides along with

the inner skin of the aforementioned peripheral wall at the time of closing even if it consists of packing for seal prepared in the inner skin of the aforementioned peripheral wall so that the aforementioned container **** may be sealed, and the aforementioned cap thread part moves along with a container thread part at the time of unstopping. The pill fur proof cap made of synthetic resin characterized by having the interior of a packing proposal which can lift the aforementioned packing for seal for the aforementioned container **** up is indicated so that seal by this packing may be canceled at the same time the aforementioned bridge goes out at least.

[0006]

[Problem(s) to be Solved by the Invention] although there is an advantage that the problem whose plastics caps of the 1st conventional technology mentioned above are the blow of the contents [high self-sustaining dense confining pressure is obtained by the pressure accompanying very small press deformation of the seal section, and deflation is quickly performed at the time of opening, and] at the time of opening and elutriation of a cap is solved. If it is going to apply this of a tamper shrimp dent type plastics cap, since seal release will be performed by revolution of few unstopping angles in advance of cutting of a bridge, the guarantee function in which opening of a container is not performed will be lost.

[0007] On the other hand, with the 2nd conventional technology, although the main part of a lid forms a liner separately, the process which forms a liner different from a lid with meanses, such as an in shell mold, in this case is needed, and it has the fault that there are many processes and a cap's cost becomes high. In addition, according to research of this inventions, when a flexible material like liner material is used, it turns out that it is difficult to cover a cap's latus angle of rotation between the container regio oralis and an inner ring, and to make a positive seal state form.

[0008] Moreover, the 3rd conventional technology also has the problem of being inapplicable in the contents which have a spontaneous generation-on principle pressure, although there are some which should be astonished in the idea of the main part of a lid needing packing separately, and being not suitable for the purpose of a cap's cost reduction too, and delaying seal breaking by movement of packing.

[0009] Therefore, the purpose of this invention cancels the above-mentioned trouble in the conventional technology, and is to offer the dress type plastics cap to whom bridge breaking is ensured in advance of seal breaking and to whom the guarantee of contents having been sealed by this is offered while the positive seal to a container is possible.

[0010] Other purposes of this invention are easy to manufacture, and moreover, when the pressurization seal state of an inner ring and the bottle mouth section becomes [the variation rate of a cap's shaft orientations] quite large at the time of unstopping, they are to offer the dress type plastics cap maintained in addition. The purpose of further others of this invention is to offer the dress type plastics cap who has the sealing ability excellent in durability especially proof-pressure sealing performance, and reduced pressure sealing performance in addition to the above-mentioned performance. Another purpose of this invention is to offer the dress type tamper shrimp dent nature plastics cap who becomes possible [enlarging a seal breaking angle].

[0011]

[Means for Solving the Problem] The skirt-board section which equipped the inside with the screw thread which engages with the top panel section and a bottle neck according to this invention, It has the inner ring which engages with the bottle mouth formed inside the top panel section. to the soffit of the aforementioned skirt-board section. In the dress type plastics cap with whom the periphery-like band stopped by the bottle neck on the occasion of unstopping is connected through the bridge which can be fractured. The aforementioned inner ring has a shaft-orientations size perpendicular to sufficient top panel to make possible a field seal with a bottle mouth inside. 10 degrees (2theta) of cone angles, 60 degrees to which the peripheral face of the aforementioned inner ring has extended in the direction of the outside of a path, and shaft orientations from the standup section of the root or the root, While it is a taper side (20 degrees or 50 degrees) and the point of the aforementioned inner ring has a tip smaller than the bore of a bottle mouth especially It has a guide side with the bottle mouth with which an outer diameter decreases gradually towards a tip. and the root of an inner ring. Under the condition of not

being larger than a bottle mouth bore, it has a bottle mouth bore and an almost equal outer diameter. For the aforementioned cap, an elastic modulus is 1.0×10^4 Or 2.0×10^4 kg/cm², especially 1.2×10^4 Or 1.6×10^4 kg/cm² The plastics cap characterized by consisting of the resin of the range is offered.

[0012] The dress type plastics cap of this invention has fundamentally the top panel section, the skirt-board section which equipped the inside with the screw thread which engages with a bottle neck, and the inner ring which engages with the bottle mouth formed inside the top panel section, and, moreover, the periphery-like band stopped by the bottle neck on the occasion of unstopping is connected with the soffit of the aforementioned skirt-board section through the bridge which can be fractured.

[0013] With this type of dress type plastics cap, guarantee that contents are maintained by the seal state is given by specifying that the periphery-like band is not separated from the skirt-board section.

[0014] It was made to have sufficient shaft-orientations (for direction perpendicular to top panel to be called shaft orientations in this specification) size to make possible a field seal with a bottle mouth inside for this inner ring in this invention. Moreover, the thing the peripheral face of an inner ring was made to become 10 degrees of cone angles and the 60-degree taper side prolonged in the direction of the outside of a path, and shaft orientations from the standup section of the root or the root, While having a tip smaller than the bore of a bottle mouth, the point of an inner ring It was made to have the guide side of the bottle mouth with which an outer diameter decreases gradually towards a tip. It was made to have a bottle mouth bore and an almost equal outer diameter under the condition [root / of an inner ring] of not being larger than a bottle mouth bore. An elastic modulus is a cap 1.0×10^4 Or 2.0×10^4 kg/cm² It has the feature remarkable in having formed from the resin of the range.

[0015] First, although contact in an inner ring and the bottle mouth section is one spot contact with the conventional dress type plastics cap, it is important to enable a bottle mouth inside and field contact of an inner ring by this invention. That is, also in the mouth section of a bottle, a mouth circles side is the portion which cannot receive damage most easily, and is maintained by the smoothest state. When enabling pressurization side contact between the peripheral face of an inner ring, and the mouth circles side and a cap displaces to shaft orientations in this way at the time of unstopping, it is expected that a seal state is maintained.

[0016] In this invention, in order to enable field contact in this pressurization state, while making it have a bottle mouth bore and an almost equal outer diameter under the condition of not being larger than a bottle mouth bore, it considered as the taper side which attached the peripheral face of an inner ring and has been originally prolonged in the direction of the outside of a path, and shaft orientations, and, moreover, the cone angle (2θ) of this taper side was also made into the angle of the fixed range, i.e., 10 degrees Thereby, welding pressure occurs in the peripheral face of an inner ring, and a seal state is maintained.

[0017] This invention persons performed numerical analysis by the finite element method about the cap made from polypropylene (refer to the example of an examination mentioned later for details) who shows accompanying drawing drawing 2 and drawing 5 , and investigated the relation between the distance (shaft-orientations distance perpendicular to a top panel) of a cap and a bottle, and the contact load in a cap's each part. As a result, drawing 1 is.

[0018] In the horizontal axis and the contact load (kgf), a vertical axis is set as a travel (mm), the result is plotted [travel] by drawing 1 , and, as for the direction of a path (X) where a contact load is parallel to a top panel, shaft orientations (Y) perpendicular to a top panel show the top panel side as positive by making the method side of outside positive here. The direction contact load of X of an inner ring and a curve 2 a curve 1 In addition, the direction contact load of Y of an inner ring, The direction contact load of X of a bottle mouth top receptacle seat and a curve 4 a curve 3 The direction contact load of Y of a bottle mouth top receptacle seat, In the direction contact load of X of the height for seals, and the curve 6, the direction contact load of Y of the height for seals and the curve 7 show the direction contact load of X of a bottle disclosure periphery receptacle seat, and the curve 8 shows [the curve 5] the direction contact load of X of a bottle disclosure periphery receptacle seat, respectively. Moreover, the range whose variation rate of Y shaft orientations is 3.56mm, and the normal load at the time of an end are performing analysis in the range of 80kgf(s).

[0019] According to the result of drawing 1, the peripheral face of an inner ring was covered at the travel (about 1 or 3mm) of latus Y shaft orientations, the contact load of about 10 kgf(s) of the path inboard sense has occurred, and the surprising fact that pressurization side contact is attained becomes clear. Furthermore, in this example, it is also understood that the bottle regio oralis contacts a bottle mouth top receptacle seat, a bottle disclosure periphery receptacle seat, and the height for seals of these receptacle Zama, and big seal of pressure resistance is finally performed between the bottle regio oralis and the height for seals.

[0020] In the analysis of drawing 1, so greatly, it is specifically set up to less than 10%, and the ranges [portion / each] of distortion are the range of elastic deformation (alignment range), and a thing by which the relation between the above-mentioned variation rate and a contact load is maintained also in which stage at the time of seal and unstopping at the time of closing.

[0021] In this invention, in order to make a field seal possible between an inner ring and a bottle mouth inside, a cap's composition plastics needs to have a rate of high elasticity comparatively, and generally it is 1×10^4 . Or 2×10^4 kg/cm², especially 1.2×10^4 Or 1.6×10^4 kg/cm² You should have the elastic modulus. When an elastic modulus is lower than the above-mentioned range, an inner ring tends to produce plastic deformation, there is an inclination it to become difficult to generate an effective contact load, on the other hand, when higher than the above-mentioned range, smooth insertion of the inner ring into a bottle mouth becomes difficult, or there is an inclination which produces breakage of the seal section.

[0022] Moreover, since it constituted from this invention so that it might have the guide side of the bottle mouth with which an outer diameter decreases the point of an inner ring gradually towards a tip while having a tip smaller than the bore of a bottle mouth, the draw to bottle disclosure of the inner ring for insertion and unstopping into the bottle mouth of an inner ring on the occasion of closing will be performed smoothly.

[0023] On the occasion of a tamper shrimp dent type plastics cap's unstopping, bridge breaking and seal breaking (leak) arise according to a cap's unstopping angle. Now, B and a seal breaking angle are set to L for the angle which bridge breaking produces on the basis of an unstopping starting position. Since bridge breaking is fractured after the resin which constitutes a bridge is extended to a certain limitation (elongation after fracture), it is difficult to make an angle B smaller than the angle equivalent to the elongation of a bridge. On the other hand, since the seal section of the top panel which has rigidity comparatively with the bottle mouth section with a dress type cap unlike a cap with a liner or packing is being engaged, it is difficult to take the angle L large enough, and for this reason, the value of B-L usually turns into a positive value, and seal breaking comes to produce it in advance of bridge breaking. On the other hand, according to this invention, since the field seal was made possible between the inner ring and the bottle mouth inside, it becomes possible to take the angle L large enough, and it becomes possible to maintain the value of B-L at the value of minus. Please refer to the example of an examination mentioned later. [0024] to which the value of B-L turns into a value of minus, bridge breaking is actually ensured in advance of seal breaking with the cap of this invention, and the guarantee of contents having been sealed by this is offered

[Embodiments of the Invention] It is desirable from the standpoint to which 0.5 or having especially the thickness of 0.8 or 1.5mm 2.0mm carry out a field seal smoothly in portions other than a guide side preferably [being prepared so that thickness / in / the horizontal section / originally towards a nose of cam / an inner ring attaches in this invention and] may be equal on parenchyma or this thickness may decrease gradually /, and generally.

[0025] moreover, the shaft orientations corresponding to the angle to the position from which engagement of the screw of a cap and a bottle mouth specifically separates although an inner ring has the shaft-orientations size which makes possible a field seal with a bottle mouth inside, a cap's tightness angle, i.e., unstopping starting position, -- it is desirable 0.3 or to have [of a variation rate] especially one 1.0 times the shaft-orientations size [0.5 or] of this 1.3 times namely, this shaft-orientations size -- not much -- being also alike -- if it becomes large, the draw at the time of the insertion and unstopping at the time of closing is difficult -- becoming -- on the other hand -- not much -- being also alike -- if small,

it will become difficult to perform an effective field seal

[0026] Furthermore, the guide side of an inner ring is suitable when 10 degrees or having especially 60 degrees (20 degrees or 50 degrees) (2θ) of cone angles make easy insertion to the bottle mouth inside of an inner ring to the inside of an inner ring.

[0027] It is desirable that the small salient for seal which engages with a way with the crowning of a bottle mouth or the periphery section outside an inner ring is formed in the inside of the top panel section with the cap of this invention in respect of proof-pressure sealing performance and self-sustaining sealing performance. Namely, although it is as having already pointed out with the cap of this invention for a pressurization side seal to be possible between an inner ring and a bottle mouth inside If the small salient for seal is made to form in the top panel circles side of a way outside an inner ring and the crowning or the periphery section of a bottle mouth is made to engage with this at the time of closing A big contact load is secured as compared with the contact load of an inner ring and a bottle mouth inside, and self-sustaining sealing performance, such as proof-pressure sealing performance and reduced pressure sealing performance, can be raised further (the curve 5 of drawing 1 , and six references).

[0028] If the knurling tool slot for cap grasping is established in the skirt-board outside side, when unstopping torque is large, unstopping operation can be performed easily.

[0029] It is desirable for you to separate a periphery-like band and a skirt-board subordinate edge by the periphery-like cutting plane, and to make it a bridge located inside a periphery-like cutting plane with the cap of this invention, and to connect a skirt-board subordinate edge and a periphery-like band in order to make the angle B of bridge breaking small. That is, by separating a periphery-like band and a skirt-board subordinate edge by the periphery-like cutting plane, the length of the free portion of a bridge can be shortened most and the elongation of the bridge at the time of unstopping can be suppressed short. Moreover, the horizontal section product of a bridge is made small, and it becomes possible to connect a skirt-board subordinate edge and a periphery-like band, and is made possible [by the load with small breaking of a bridge] by making it a bridge located inside a periphery-like cutting plane. In this mode, a periphery-like cutting plane is prepared through at least one connection section, and the slit prolonged in two shaft orientations and the slit prolonged in one hoop direction which crosses the slit of these two books are prepared in the periphery-like band section near the connection section.

[0030] The periphery-like band is suitable, in order to arrange many the flexible fins and ratchets which are prolonged in path inboard and the direction of slant in the shape of a periphery, or for having the auxiliary bead which estranged and prepared only the small interval under the fin further to prevent the circumference of the companion of a periphery-like band on the occasion of unstopping and to ensure fracture of a bridge.

[0031] When establishing the circumference prevention mechanism of a companion which has rigidity like a ratchet, it is desirable that form in the soffit of the skirt-board section the stopper with which it was located inside the periphery-like cutting plane, and only the small interval is prolonged in the periphery-like bandeau rather than the periphery-like cutting plane, this stopper and bridge are engaged on the occasion of closing, and a cap's revolution is made to be performed because of protection of the bridge at the time of closing. That is, since closing operation is performed while a stopper and a bridge contact covering the latus area of the length direction (shaft orientations), when the rupture stress of the shaft orientations of a bridge is comparatively small, protection of a bridge will be performed and fracture of a bridge will be suppressed.

[0032] With the suitable cap of this invention, at least one height for seals which was located through the slot from the receptacle seat which engages with the crowning of the bottle regio oralis and the periphery section exactly on parenchyma, and this receptacle seat, and projected only the minute interval rather than the field of this receptacle seat is especially prepared in a way outside the inner ring of the top panel section. With this cap, in the stage near the telophase of closing operation, the bottle mouth corner section and the height for seals are engaged first, and this height is pressed. the inner direction from the field which the slot located in the both sides of a height permits the compression set of a height, and contains a receptacle seat among heights -- a protrusion -- it is in the state (this state -- receiving -- a

seat and a bottle mouth crowning -- moreover, the receptacle seat and the bottle disclosure periphery are being exactly engaged on parenchyma) where the volume of a portion was extruded by the slot the bottom, and seal is completed Furthermore, a height always carries out the compression set only of the minute interval, in order that a receptacle seat may suppress too much deformation. Therefore, it is hard to deform plastically, and the fall of the dense confining pressure accompanying aging is remarkably small, and high dense confining pressure is guaranteed not to mention the time of seal also at the time of RISHIRU. In this way, with this cap, the sealing ability excellent in durability especially proof-pressure sealing performance, and reduced pressure sealing performance are acquired.

[0033] In the cap of this mode, in order that that the height for seals has the cross-section configuration of a trapezoidal shape mostly, and a slot has the cross-section configuration of a handstand trapezoidal shape mostly may make the compression set of a height perform smoothly, it is suitable. Moreover, it is desirable that it is in the range whose cone angle of the above-mentioned trapezoidal-shape height or a slot is 80 degrees or 100 degrees from the same standpoint.

[0034] Moreover, it is suitable that the upper surface of the height for seals has the field which should carry out the seal of the container regio oralis, and a front face in complementary relationship in order to make the seal in a field possible.

[0035] Preventing the plastic deformation of the height for seals, it is desirable for the height for seals to have received and to have projected to the method of the inside of 3 or 1000 micrometers rather than the field of a seat and that it is in the range whose width size at the nose of cam of the height for seals is 5 or 500 micrometers in order to enable positive proof-pressure seal and reduced pressure seal.

[0036] With the cap of this mode of this invention, even if it is good that the receptacle seat which engages with the periphery section of the bottle regio oralis is formed by the inner skin of the outer ring projected and prepared in the top panel section at shaft orientations and path inboard and an error is in the outer-diameter size of the bottle regio oralis in this case, an outer ring spreads in the direction of the outside of a path, and the advantage that positioning of the bottle regio oralis can be made certainly and smooth is brought about.

[0037] although the dress type plastics cap of this invention can use various plastics, for example, is formed from resins with an arbitrary olefin system resin; acrylonitrile-styrene-butadiene (ABS) resin; shock resistance styrene resin; acrylic resin; nylon system resin etc., such as a polyethylene, polypropylene, and propylene-ethylene copolymer and a propylene-butene-1 copolymer, that what is necessary is just what has the elastic modulus of the range mentioned above, in respect of sealing ability and a moldability, a polypropylene resin to a high density polyethylene and bird clapper are desirable [0038] the metal mold of the configuration corresponding to a cap configuration in a cap's fabrication -- using it -- injection molding of the above-mentioned resin -- or compression molding can perform easily

[0039]

[Example] The following example explains this invention concretely. The plastics cap of drawing 2 of one example of this invention is a cross-section side elevation a part. It is a cross-section side elevation in part. drawing 3 is the expanded sectional view of the important section of the plastics cap of drawing 2, and drawing 4 shows the state where the plastics cap of drawing 2 was closed into the bottle -- It is a cross-section side elevation in part. drawing 5 is explanatory drawing showing the size of the cap of drawing 2 who used for the example of an examination, and drawing 6 shows the changed completely type of the cap of the example of drawing 2 -- It is a cross-section side elevation in part. drawing 7 shows other deformation of the cap of the example of drawing 2 -- the plastics cap of other examples is a cross-section side elevation a part, it is a cross-section side elevation in part, and drawing 8 shows the state which shows the plastics cap of the example of further others [drawing 9] where drawing 10 closed the cap of drawing 9 into the bottle -- it is a cross-section side elevation in part

[0040] In example 1 drawing 2, this plastics cap 1 is doing the shape of a cylindrical shape mostly in accordance with the configuration of the container regio oralis, and is formed in one from the top panel section 2 and the skirt-board section 3 which hung from the periphery section of a top panel. An inner ring 5 and seal, or the seal auxiliary mechanism 6 is formed in the inside 4 of the top panel section 2.

The screw of a bottle neck and the engaged screw 7 are formed in the inside of the skirt-board section 3, and the knurling tool slot 8 for making a cap's grasping easy is formed in the superficies of the skirt-board section 3. The periphery-like band 11 for unstopping designation is connected with the soffit 9 of the skirt-board section 3 through the bridge 10 which can be fractured. Many flexible fins 12 prolonged in path inboard and the direction of slant have been arranged in the periphery-like band 11 in the shape of a periphery, and are prepared in it, thereby, on the occasion of unstopping, the circumference of the companion of a periphery-like band is prevented and fracture of a bridge is ensured.

[0041] from the taper side 22 where the peripheral face of an inner ring 5 should turn into the root section 20, the almost perpendicular standup section 21, and a sealing surface in drawing 3 which shows the important section of the cap of drawing 2, the maximum outer-diameter section 26, the guide side 23, and the 24 [latest] -- becoming -- **** -- a tip -- the taper-like inner skin 25 is formed in the inner direction from 24

[0042] the direction (it sets to drawing and is down) where the taper side 22 which should turn into a sealing surface is perpendicular to a top panel -- and it has sufficient size to be inclined and prolonged in the direction of the outside of a path (for it to set to drawing and to be the right), and make possible a field seal with a bottle mouth inside the cone angle (2θ) of this taper side 22 -- general -- 10 degrees -- or 60 degrees is the range of 20 degrees or 50 degrees especially

[0043] By this example, while making it have an outer diameter almost equal to a bottle mouth bore (DI), the almost perpendicular standup section 21 is formed in the bottom of the condition [root / of an inner ring / 20] of not being larger than a bottle mouth bore (DI) so that the insertion to a bottle mouth inside and a draw may be made easy.

[0044] moreover, the tip smaller than the bore (DI) of a bottle mouth at the nose of cam of an inner ring 5 -- while forming 24, the guide side 23 of the bottle mouth with which an outer diameter decreases gradually towards the 24 [latest] from the maximum outer-diameter section 26 of the taper-like peripheral face 22 is formed, and insertion of the inner ring 5 to a bottle mouth inside is made easy

[0045] In this example, although thickness is decreasing towards a nose of cam, the thickness of an inner ring [in / the standup section 21 / the cone angle (2α) of the inner skin 24 of an inner ring 5 is the same as that of the cone angle (2θ) of the taper-like peripheral face 22, therefore] While the thickness (t) of the inner ring in the taper-like peripheral face 22 is fixed and makes possible deformation of the taper-like peripheral face 22 of an inner ring towards a nose of cam, it is made for the contact load in the taper-like peripheral face 22 to become fixed. Of course, mist and the thickness [in / the taper-like peripheral face 22 / it enlarges and] (t) of an inner ring are turned at a nose of cam for the cone angle (2α) of the inner skin 24 of an inner ring 5 from the cone angle (2θ) of the taper-like peripheral face 22, and it is made to decrease a little.

[0046] In drawing 3, the self-sustaining seal mechanism 6 is formed in the way outside the inner ring 5 of the top panel section 2. this seal mechanism 6 The receptacle seat 30 which engages with the crowning of the bottle regio oralis exactly on parenchyma, and the receptacle seat 31 which engages with the periphery section of the bottle regio oralis exactly on parenchyma, It consists of at least one height 34 for seals which projected only the minute interval rather than the field of the bottle which is located through slots 32 and 33 from these receptacle seats 30 and 31, and passes along this receptacle seat.

[0047] In this example, it will be understood that the height 34 for seals has a trapezoidal shape mostly, and slots 32 and 33 also have the cross-section configuration of a handstand trapezoidal shape mostly. Moreover, with the cap of this mode, it will also be understood that the receptacle seat 31 which engages with the periphery section of the bottle regio oralis is formed by the inner skin of the outer ring 35 which projected to the perpendicular direction and path inboard of a top panel in the shape of a taper, and was prepared in them from the periphery of the top panel section.

[0048] Again, it returns to drawing 2, and the periphery-like cutting plane 13 separates the periphery-like band 11 and the skirt-board subordinate edge 9 with the cap of this example, and you make it a bridge 10 located inside the periphery-like cutting plane 13, the skirt-board subordinate edge 9 and the periphery-like band 11 are connected with the connection section on a bridge 10, and it is made to make

the angle B of bridge breaking small.

[0049] By the example of drawing 2, the periphery-like cutting plane 13 leaves the connection section 14 (connection of the skirt-board subordinate edge 9 and the periphery-like band 11), and is formed. in the periphery-like band 11 From the edge of the periphery-like cutting plane 13, or its near to the middle From the hoop-direction slit or the weakening line 16, hoop-direction slit, or the weakening line 16 of the small interval which sets a small interval from the shaft-orientations slit of the 1st small interval prolonged in a shaft-orientations lower part or the weakening line 15, and a periphery-like cutting plane, and is prolonged in parallel, and intersects the shaft-orientations slit 15 to the middle of a periphery-like band a shaft-orientations lower part -- being prolonged -- the [and] -- the shaft-orientations slit of 1 ** - - a hoop direction -- interval **** -- the connection section 18 of the small interval formed under the shaft-orientations slit of the 2nd small interval prepared or the weakening line 17 and the 2nd shaft-orientations slit, or the weakening line 17 is formed, respectively When removing a cap according to each of these mechanisms, it is possible to also remove the periphery-like band 11 simultaneously so that it may mention later.

[0050] In drawing 4 which shows the state where the cap of drawing 2 was closed to the bottle mouth, the bottle mouth 40 is equipped with inner skin 41, the crowning 42, and the peripheral face 43, and the jaw 45 and support ring 46 the screw 44 for cap conclusion and for periphery-like band fixation are prepared under the peripheral face, respectively.

[0051] On the occasion of closing, the screw 44 of a bottle mouth and a cap's screw 7 are engaged, and the closing process by a cap's 1 revolution advances.

[0052] With advance of closing, the crowning 42 of a bottle mouth engages with the guide side 23 (drawing 3) of the cap inner ring 5, in accordance with the bottle mouth inside 41, it is shown to a peripheral face 22 to the cap inner ring 5 following the guide side 23, and it is introduced in a bottle mouth.

[0053] The corner section of the bottle mouth 40 can engage with the height 34 (drawing 3) for seals, and can make the seal excellent in self-sustaining sealing performance, such as proof-pressure sealing performance and reduced pressure sealing performance, form in the telophase of a closing process. under the present circumstances, a cap's top receptacle post 30 and the periphery section receptacle seat 31 -- the bottle mouth 40 -- holding -- suitable dense confining pressure -- ***** -- it acts like Of course, a field seal suitable also between the peripheral face 22 of the cap inner ring 5 and the bottle mouth inside 41 is performed. Moreover, a cap's fin 12 eats into the bottom of the jaw 45 of the bottle mouth 1, and is engaging with the bottle mouth.

[0054] On the occasion of unstopping, the closing direction and an opposite direction are revolved in a cap 1. Since the periphery-like band 11 is being fixed to the bottle neck by the fin 12 and the auxiliary bead at revolution impotentia, if the shearing force by a cap's revolution acts on a bridge 10 and reaches the bridge breaking angle B, shearing of a bridge 10 will produce it first. Although the field seal between the peripheral face 22 of the cap inner ring 5 and the bottle mouth inside 41 is maintained, if after shearing of this bridge 10 reaches the leak angle L, leak will produce it. In addition, the seal of the bottle corner section and the height 34 for seals is canceled within the bridge breaking angle B. Furthermore, by advancing a cap's 1 revolution, the engagement state of a cap's 1 screw 7 and the screw 44 of the bottle mouth 40 is canceled, and secession of a cap is attained from a bottle mouth.

[0055] Although the connection 14 of the soffit 9 of the skirt-board section and the periphery-like band 11 cannot be cut at the time of unstopping in the case of the cap of the example of drawing 2 the state where the periphery-like band 11 was stopped by the jaw section of a bottle since the interval of a slit or the weakening lines 15, 16, and 17 spread -- the upper part of the skirt-board section 3, although it has and raising becomes possible When a variation rate becomes more than fixed, a connection 18 will fracture and the periphery-like band 11 will be removed from a bottle 40 with the skirt-board section 3.

[0056] The unstopping sex test etc. was performed using the cap and bottle below [the example of an examination] as a sample.

[0057] (1) Cap : the cap who has the size which has the structure and the configuration which are shown in drawing 2 and drawing 3, and is shown in drawing 5 was used.

theta= 14 degrees alpha= 14 degrees A cap outer diameter 29.9mm The path of the root section 20 of an inner ring 5 20.2mm The path of the maximum outer-diameter section 26 of an inner ring 5 21.05mm The height direction size of an inner ring 5 4mm The height of a guide side 1mm A screw pitch 3.175mm / 360 degrees The number of a bridge 22 pieces Protrusion size of the height for seals 0.15mm cap's fabrication used the white polypropylene constituent (elastic-modulus 1.6×10^4 kg/mm²) as resin, and fabricated it by amount = of eyes 3.08g.

[0058] (2) Bottle content volume 1.5 It was a bottle made from the polyethylene terephthalate of L, and heat crystallization of the regio oralis was carried out, and the regio-oralis bore of a bottle used the 20.6mm (**0.25mm) thing.

[0059] 1) It carried out as follows [a hot pack restoration examination], and the hot pack restoration bottle was prepared.

(1) Capping of the warm water of 87 degree C was filled up with and carried out to the bottle so that head space 4ml might remain.

(2) The following conditions performed capping using the Alcoa 201-1SA capper.

Head pressure = 15Kgf suitor theque torque = 15 Kgf-cm head rotational frequency Shower (30 degree-C-15 minutes) cooling was carried out after 30-second falling sideways (60 degree-C-15 minutes) immediately after =230rpm(3) capping.

The following examination items estimated the above-mentioned hot pack restoration bottle.

[0060] (1) Unstopping nature examination (unstopping torque, bridge breaking & leak angle) (n= 5)

After hot pack restoration, the bottle was kept by erection by 5 degrees C, the room temperature, and the 40-degree C temperature province, and was taken out from the temperature province after one day, one week, and two weeks, and unstopping torque, the tightness angle, and the bridge breaking & leak angle were measured within 20 seconds at the room temperature.

[0061] Although the tightness angle was an angle until screwing of the screw of a cap and a bottle mouth is canceled of an unstopping starting position, from this angle, it deducted 360 degrees equivalent to one rotation in the table, and was shown in it. The bridge breaking angle (B) was shown the angle until the cutting start of the bridge is carried out from an unstopping starting position. The leak angle (L) was shown the angle until leak is started from an unstopping starting position.

[0062] The number of examinations (N) is set to 5, and a test result is shown in the following table 1.

[0063]

[Table 1]

経時 &環境	N	開栓トルク (Kgf・cm)		締まり 角度(°)	B 角度(°)	L 角度(°)	B-L 角度(°)
		1st	2nd				
1日後 室温	1	11.8	6.8	200	220	260	-40
	2	11.8	7.5	210	210	330	-120
	3	11.0	8.3	230	245	330	-85
	4	12.6	8.4	210	240	335	-95
	5	12.0	6.8	200	240	335	-95
	平均	11.84	7.56	210	231	318	-87
1週間後 5℃	1	16.8	8.0	215	205	330	-125
	2	19.5	7.5	220	205	205	0
	3	19.1	6.6	215	195	195	0
	4	18.2	7.2	225	215	280	-65
	5	15.7	7.8	235	210	285	-75
	平均	17.86	7.42	222	206	259	-53
室温	1	11.5	6.3	220	190	340	-150
	2	14.2	8.3	210	225	340	-115
	3	13.1	7.6	235	250	335	-85
	4	13.1	6.0	235	230	220	+10
	5	13.1	6.6	205	240	320	-80
	平均	13.0	6.96	221	227	311	-84
40℃	1	8.3	8.3	215	295	345	-50
	2	9.4	5.6	260	310	340	-30
	3	7.9	6.2	230	310	345	-35
	4	7.5	7.0	210	280	325	-45
	5	9.1	6.2	250	300	285	+15
	平均	8.44	6.66	233	299	328	-29
2週間後 5℃	1	19.7	6.8	220	200	265	-65
	2	15.0	8.6	220	190	190	0
	3	18.8	7.5	225	205	205	0
	4	15.0	7.2	220	180	240	-60
	5	16.7	7.8	215	195	235	-40
	平均	17.04	7.58	220	194	227	-33
室温	1	12.5	6.4	245	220	340	-120
	2	14.0	8.2	220	250	310	-60
	3	13.5	8.4	210	255	340	-85
	4	12.5	7.3	245	250	330	-80
	5	12.6	7.2	240	235	330	-95
	平均	13.02	7.5	232	242	330	-88
40℃	1	8.0	5.7	240	320	350	-30
	2	8.2	5.7	240	330	345	-15
	3	8.2	6.9	255	315	350	-35
	4	7.9	6.2	255	265	345	-80
	5	7.9	4.5	240	285	340	-55
	平均	8.04	5.8	246	303	346	-43

[0064] (2) Handstand fall impact test (n= 10)

Handstand fall of the restoration bottle was carried out from a height of 60cm one day after hot pack restoration at the iron lump of 10-degree inclination. After leaving it to a room temperature division for three days and leaving it in 40-degree-C temperature province for one day for one day at 5 more degree-C temperature province, the existence of a fall of an oil level is checked. The fall of an oil level was not seen about all ten examined bottles by the test result.

[0065] (3) Moment compressive test (n= 10)

The pressure up was performed at the rate of 5psi(s) at 1 second. Then, it checked that it is left for 1 minute in 128psi, and the liquid spill of the bottle in that case is observed, a pressure up was carried out further, it was left for 1 minute in 175psi(s), and there was no cap jump. A liquid-spill and cap jump was not checked about all ten which the test result examined bottles, either.

[0066] (4) Thermo-cycle examination (n= 10)

The reduced pressure value in a bottle was measured for operation of [-> with a week [-one week] of 40 degrees C 5 degrees C -one-week] ** at a two-cycle repeat deed and 15 degrees C to the restoration bottle. It compared with the reduced pressure value of the restoration bottle which did not perform the above-mentioned operation. About all ten which the test result examined bottles, the fall of a reduced

pressure value was not observed and the liquid spill was not checked.

[0067] 2): It carried out as follows [a cold philharmonic restoration examination], and the cold philharmonic restoration bottle was prepared.

(1) After filling up a bottle with the water of ordinary temperature, capping of the carbon-dioxide-gas substitution was performed and carried out. Then, the restoration bottle was heat-treated in the following way.

(2) Capping conditions were performed on the same conditions as the above-mentioned hot pack restoration.

(3) Heat treatment (shower) condition (42 degree-C-13 minutes) ->(60 degree-C-10 minutes) ->(80 degree-C-14 minutes) ->(77 degree-C-9 minutes) ->(60 degree-C-10 minutes) ->(42 degree-C-12 minutes) -> (30 degree-C-5 minutes)

The following examination items estimated the above-mentioned cold philharmonic restoration bottle.

[0068] (1) Unstopping torque examination (unstopping torque, tightness angle) (n= 5)

After cold philharmonic restoration, the bottle was kept by erection by 5 degrees C, the room temperature, and the 40-degree C temperature province, and was taken out from the temperature province after one day, one week, and two weeks, and unstopping torque and the tightness angle were measured within 20 seconds at the room temperature.

[0069] A test result is shown in the following table 2.

[0070]

[Table 2]

経時	5℃			室温			40℃		
	開栓トルク(Kgf・cm)	締めトルク(Kgf・cm)	角度(°)	1st	2nd	角度(°)	1st	2nd	角度(°)
1日後	14.66	7.94	214	10.96	8.82	213	7.12	8.26	228
1週間後	17.28	8.4	228	10.82	8.14	223	7.56	6.80	205
2週間後	14.06	7.42	208	11.84	8.06	228	6.42	6.28	203

[0071] (2) Handstand fall impact test (n= 7)

Handstand fall was carried out from a height of 60cm one day after cold philharmonic restoration at the iron lump of 10-degree inclination. After leaving it to a room temperature division on the 3rd and leaving it in 40-degree-C temperature province on the 1st on the 1st at 5-degree-C temperature province, the existence of a fall of an oil level was checked. The fall of an oil level was not seen about all seven examined bottles by the test result.

[0072] (3) Moment compressive test (n= 7)

100psi(s) were applied in the SST tester, it held for 30 seconds, and the existence of a liquid spill was checked. The liquid spill was not checked about all seven which the test result examined bottles.

[0073] 3) As a result of performing numerical analysis by the finite element method by the computer about the analysis above-mentioned cap by the computer, the result shown in drawing 1 was obtained.

[0074] In drawing 6 which shows deformation of the cap (drawing 2) of an example 1, the fixed mechanism 12 to the bottle neck formed in the periphery-like band 11 is different from the thing of drawing 2 , and others are as common as the thing of drawing 2 . With the cap of this example, the fixed mechanism 12 is formed in the inside of the periphery-like band 11 through the root 51 as periphery-like hook 50 of facing up and the main sense, the notching slot 52 is formed by the middle of the root from the bore side nose of cam of this periphery-like hook 50, and engagement to the bottle mouth jaw section 45 (refer to drawing 4) is made easy. The cap of this configuration fabricates, after the periphery-like hook 50 has become facing down, and it is obtained by reversing the periphery-like hook 50 upward after fabrication, and the notching slot 52 also has the operation which makes reversal of a periphery-like hook easy in this case.

[0075] In drawing 7 which shows other deformation of the cap (drawing 2) of an example 1, the fixed mechanism 15 to the bottle neck formed in the periphery-like band 11 is different from the thing of drawing 2 , and others are as common as the thing of drawing 2 . With the cap of this example, the fixed mechanism 12 is formed in the inside of the periphery-like band 11 as a flexible fin 53 of the path center

sense, and the inner sense bead 55 is formed in the lower part of this periphery-like fin 53 through the small slot 54. The notching slot 56 from an inner circumference side nose of cam to [the slot] in the middle of the root is formed in the fin 53, and bending to the upper part of the fin 53 at the time of closing is made easy. This fin 53 is fixed by being engaged to the bottle mouth jaw section 45 (referring to drawing 4). In addition, the inner sense bead 55 is performing the operation whose periphery-like fin 53 prevents too much bending to the direction of facing down at the time of unstopping.

[0076] In drawing 8 which shows the cap of other examples of example 2 this invention, although the structure of an inner ring 5 and the structure of other seal sections 6 are the same as that of the case of drawing 2 When an interval is set, the notching section 19 is formed in shaft orientations and leak occurs between the bottle mouth inner circumference 41 and an inner ring 5 on a cap's 1 screw 7 When the screws of a cap and a bottle mouth are being engaged, deflation is performed promptly and, thereby, a cap's flight is prevented.

[0077] In the example shown in drawing 8 , the periphery-like cutting plane 13 is formed over a perimeter, and is an annular cutting plane. Many flexible ratchets 57 prolonged in path inboard are arranged in the periphery-like band 11 in the shape of a periphery, it is equipped with them, and it stops with the ratchet (not shown) formed in the bottle regio oralis at the time of unstopping. The root of the direction of the outside of a path or the upper-limit section is also being fixed to the periphery-like band 11 so that this ratchet 57 may be illustrated.

[0078] With this cap, it rotates so that the ratchet 57 of the method of the inside of a periphery-like band may overcome the ratchet of the bottle regio oralis at the time of closing. In order to prevent fracture of the bridge 10 in this case, the stopper 58 with which it was located inside the periphery-like cutting plane 13, and only the small interval is prolonged in the periphery-like band 11 side rather than the periphery-like cutting plane 13 is formed in the soffit 9 of the skirt-board section, a stopper 58 and a bridge 10 engage with it on the occasion of closing, and a cap's revolution is made to be performed to it.

[0079] The slot 59 is formed between the inner circumference side edge edge of the periphery-like cutting plane 13, and the stopper 58, and a certain amount of flexibility is given to the stopper 58. The stopper 59 has the perpendicular engagement section 60 which engages with a bridge 10 at the time of closing, and the ramp 61 which engages with the amputation stump edge of a bridge 10 cut at the time of unstopping, depresses the periphery-like band 11 downward through the bridge edge cut at the time of unstopping by this, makes it clear that the periphery-like band 11 is separated, and raises tamper shrimp dent nature further.

[0080] In drawing 9 and drawing 10 which show the tamper shrimp dent type plastics cap of other examples of example 3 this invention, the cross section which engages with a bottle mouth crowning used what equipped the top panel circles side 4 outside an inner ring 5 with the salient for seals of a trapezoidal shape as a self-sustaining seal mechanism 6 in this example. The composition of an inner ring 5, a bridge 10, and the periphery-like band 11 is the same as that of the thing of an example 1. Although not illustrated, it is the same as that of the case of drawing 2 that the receptacle seat which engages with a bottle mouth crowning exactly on parenchyma may be prepared in an inner circumference [of the salient 6 for seals of a trapezoidal shape] and periphery side through a slot.

[0081]

[Effect of the Invention] The various troubles in the conventional technology were able to cancel by making the quality of the material of a cap's plastics into a specific thing, while preparing an inner ring with a specific configuration and a specific size, and, according to this invention, the dress type plastics cap to whom bridge breaking is ensured in advance of seal breaking and to whom the guarantee of contents having been sealed by this is offered while the positive seal to a container is possible was able to offer.

[0082] Moreover, in addition to the above-mentioned performance, the sealing ability excellent in durability especially proof-pressure sealing performance, and reduced pressure sealing performance were acquired by forming the small height for seals which engages with a bottle mouth crowning or the periphery section in addition to an inner ring. Furthermore, while enlarging the seal breaking angle by preparing a bridge and a periphery-like band in a specific relation, the dress type tamper shrimp dent

nature plastics cap who becomes possible [making a bridge breaking angle small] was able to be offered.

[Translation done.]